WHAT IS CLAIMED IS:

1. Isolated DNA encoding a Tumor Antigen Derived Gene-14 (TADG-14) protein, wherein said TADG-14 protein has the amino acid sequence shown in SEQ ID No. 7.

2. The DNA of claim 1, wherein said DNA has the sequence of SEQ ID No. 6.

3. A vector capable of expressing the DNA of claim 1, wherein said vector is adapted for expression in a cell and comprises of regulatory elements necessary for expressing said DNA in said cell.

4. The vector of claim 3, wherein said DNA has the sequence of SEQ ID No. 6.

5. The vector of claim 3, wherein said DNA is positioned in reverse orientation relative to said regulatory elements such that TADG-14 antisense DNA is produced.

6. A host cell transfected with the vector of claim 3, wherein said vector expresses a TADG-14 protein.

7. The host cell of claim 6, wherein said cell is selected from group consisting of bacterial cells, mammalian cells, plant cells and insect cells.

8. The host cell of claim 7, wherein said bacterial cell is *E. coli.*

9. Isolated and purified TADG-14 protein coded for by DNA selected from the group consisting of:

(a) isolated DNA having the sequence of SEQ ID No. 6; and

(b) isolated DNA differing from the isolated DNA of (a) in codon sequence due to the degeneracy of the genetic code, and which encodes a TADG-14 protein.

10. The isolated and purified TADG-14 protein of claim 9 having the amino acid sequence shown in SEQ ID No. 7.

11. A method of detecting TADG-14 mRNA in a biological sample, comprising the steps of:

(a) contacting said sample with a probe specific for TADG-14, wherein said probe comprises of sequence complementary to SEQ ID No. 6; and

(b) detecting hybridization of said probe with TADG-14 mRNA, wherein the presence of hybridization indicates the presence of TADG-14 mRNA.

12. The method of claim 11, wherein said biological sample is selected from the group consisting of blood, interstitial fluid, ascites fluid, tumor tissue biopsy and circulating tumor cells.

13. The method of claim 12, wherein said biological sample is from an individual.

14. The method of claim 13, wherein said individual is suspected of having cancer.

15. A kit for detecting TADG-14 mRNA, comprising an oligonucleotide probe specific for TADG-14, wherein said probe comprises of sequence complementary to SEQ ID No. 6.

16. The kit of claim 15, further comprising a label with which to label said probem, and means for detecting said label.

17. A method of detecting TADG-14 protein in a biological sample, comprising the steps of:

(a) contacting said sample with an antibody specific for TADG-14 or a fragment thereof; and

(b) detecting binding of said antibody to TADG-14 protein in said sample, wherein antibody binding to TADG-14 in said sample indicates the presence of TADG-14 protein in said sample.

18. The method of claim 17, wherein said biological sample is selected from the group consisting of blood, interstitial fluid, ascites fluid, tumor tissue biopsy and circulating tumor cells.

19. The method of claim 18, wherein said biological sample is from an individual.

20. The method of claim 19, wherein said individual is suspected of having cancer.

21. A kit for detecting TADG-14 protein, comprising an antibody specific for TADG-14 protein or a fragment thereof.

22. The kit of claim 21, further comprising means to detect said antibody.

23. An antibody which is specific for TADG-14 protein or a fragment thereof.

24. A method of screening for compounds that inhibit protease activity of TADG-14, comprising the steps of:

(a) contacting a sample with a compound, wherein said sample comprises TADG-14 protein; and

(b) assaying for TADG-14 protease activity, wherein a decrease in said TADG-14 protease activity in the presence of said compound relative to TADG-14 protease activity in the absence of

said compound is indicative of a compound that inhibits TADG-14 protease activity.

25. A method of inhibiting expression of TADG-14 in a cell, comprising the step of introducing the vector of claim 5 into a cell, wherein expression of said vector produces TADG-14 antisense DNA in said cell, wherein said TADG-14 antisense DNA hybridizes to endogenous TADG-14 mRNA and inhibits expression of TADG-14 in said cell.

26. A method of inhibiting a TADG-14 protein in a cell, comprising the step of introducing an antibody specific for TADG-14 protein or a fragment thereof into said cell, wherein binding of said antibody to TADG-14 protein inhibits said TADG-14 protein in said cell.

27. A method of targeted therapy to an individual, comprising the step of:

(a) administering to an individual a compound having a targeting moiety and a therapeutic moiety, wherein said targeting moiety is specific for TADG-14.

28. The method of claim 27, wherein said targeting moiety is selected from the group consisting of an antibody specific for TADG-14 and a ligand or ligand binding domain that binds TADG-14.

29. The method of claim 27, wherein said therapeutic moiety is selected from the group consisting of a radioisotope, a toxin, a chemotherapeutic agent, an immune stimulant and a cytotoxic agent.

30. The method of claim 27, wherein said individual suffers from a cancer selected from the group consisting of ovarian cancer, breast cancer, prostate cancer and colon cancer.

31. A method of diagnosing cancer in an individual, comprising the steps of:

(a) obtaining a biological sample from an individual;

(b) detecting TADG-14 in said sample, wherein the presence of TADG-14 in said sample is indicative of the presence of carcinoma in said individual.

32. The method of claim 31, wherein said biological sample is selected from the group consisting of blood, interstitial fluid, ascites fluid, tumor tissue biopsy and circulating tumor cells.

33. The method of claim 31, wherein said detection of TADG-14 is by means selected from the group consisting of Northern blot, Western blot, PCR, dot blot, ELISA sandwich assay, radioimmunoassay, DNA array chips and flow cytometry.

34. The method of claim 31, wherein said carcinoma is selected from the group consisting of ovarian, breast, colon and prostate cancer.

35. A method of vaccinating an individual against TADG-14 protein, comprising the step of:

inoculating an individual with a TADG-14 protein or fragment thereof that lacks TADG-14 protease activity, wherein said inoculation with said TADG-14 protein or fragment thereof elicits an immune response in said individual, thereby vaccinating said individual against TADG-14.

36. The method of claim 35, wherein said individual is selected from the group consisting of individual with cancer, individual suspected of having cancer and individual at risk of getting cancer.

37. The method of claim 35, wherein the size of said TADG-14 fragment is from 9 amino acids to 20 amino acids.

38. The method of claim 37, wherein said 9 amino acid fragment is selected from the group consisting of SEQ ID Nos. 17, 18, 41, 42, 47, 48, 53, 56, 64.

39. A method of producing activated immune cells directed toward TADG-14, comprising the steps of:

exposing immune cells to a TADG-14 protein or fragment thereof that lacks TADG-14 protease activity, wherein said exposure to said TADG-14 protein or fragment thereof activates said immune cells, thereby producing activated immune cells directed toward TADG-14.

40. The method of claim 39, wherein said immune cells are selected from the group consisting of B cells, T cells and dendritic cells.

41. The method of claim 40, wherein said dendritic cells are isolated from an individual prior to exposure to a TADG-14 protein or fragment thereof, wherein said dendritic cells are reintroduced into said individual subsequent to said exposure.

42. The method of claim 41, wherein said individual is selected from the group consisting of individual with cancer, individual suspected of having cancer and individual at risk of getting cancer.

43. The method of claim 39, wherein the size of said TADG-14 fragment is from 9 amino acids to 20 amino acids.

44. The method of claim 43, wherein said 9 amino acid fragment is selected from the group consisting of SEQ ID Nos. 17, 18, 41, 42, 47, 48, 53, 56, 64.

45. An immunogenic composition comprising an immunogenic fragment of a TADG-14 protein and an appropriate adjuvant.

46. The immunogenic composition of claim 45, wherein the size of said TADG-14 fragment is from 9 amino acids to 20 amino acids.

47. The immunogenic composition of claim 46, wherein said 9 amino acid fragment is selected from the group consisting of SEQ ID Nos. 17, 18, 41, 42, 47, 48, 53, 56, 64.

48. An oligonucleotide having a sequence of SEQ ID No. 72.

49. A composition comprising the oligonucleotide of claim 48 and a physiologically acceptable carrier.

50. A method of treating a neoplastic state in an individual in need of such treatment, comprising the step of:

administering to said individual an effective dose of the composition of claim 49.

51. The method of claim 50, wherein said neoplastic state is selected from the group consisting of ovarian cancer, breast cancer, lung cancer, colon cancer, and prostate cancer in which TADG-14 is overexpressed.

52. An isolated DNA encoding a TADG-14 protein variant, said TADG-14 variant has the amino acid sequence of SEQ ID NO. 75.

53. A vector capable of expressing the DNA of claim 52, wherein said vector is adapted for expression in a cell and comprises of regulatory elements necessary for expressing said DNA in said cell.

54. A host cell transfected with the vector of claim 53, wherein said vector expresses a TADG-14 variant having the amino acid sequence of SEQ ID NO. 75.

55. The host cell of claim 54, wherein said cell is selected from group consisting of bacterial cells, mammalian cells, plant cells and insect cells.

56. An isolated and purified TADG-14 protein variant, said TADG-14 variant has the amino acid sequence of SEQ ID NO. 75 or a fragment thereof.

57. A method of detecting mRNA of TADG-14 variant in a biological sample, comprising the steps of:

(a) contacting said sample with a probe specific for TADG-14 variant, wherein said probe comprises of sequence complementary to the DNA of claim 52; and

(b) detecting hybridization of said probe with TADG-14 variant mRNA, wherein the presence of hybridization indicates the presence of TADG-14 variant mRNA.

58. The method of claim 57, wherein said biological sample is selected from the group consisting of blood, interstitial fluid, ascites fluid, tumor tissue biopsy and circulating tumor cells.

59. A kit for detecting TADG-14 variant mRNA, said kit comprises an oligonucleotide probe specific for TADG-14 variant, wherein said probe comprises of sequence complementary to the DNA of claim 52.

60. A method of detecting TADG-14 variant protein in a biological sample, comprising the steps of:

(a) contacting said sample with an antibody specific for TADG-14 variant or a fragment of antibody specific for TADG-14 variant; and

(b) detecting binding of said antibody to TADG-14 variant protein in said sample, wherein antibody binding to TADG-14 variant in said sample indicates the presence of TADG-14 variant protein in said sample.

61. The method of claim 60, wherein said biological sample is selected from the group consisting of blood, interstitial fluid, ascites fluid, tumor tissue biopsy and circulating tumor cells.

62. A kit for detecting TADG-14 variant protein, said kit comprises an antibody specific for TADG-14 variant protein or a fragment of antibody specific for TADG-14 variant.

63. An antibody which is specific for TADG-14 variant protein or a fragment of antibody specific for TADG-14 variant or a fragment thereof.

64. A method of diagnosing cancer in an individual, comprising the steps of:

(a) obtaining a biological sample from an individual; and

(b) detecting in said sample TADG-14 variant having the amino acid sequence of SEQ ID NO. 75, wherein the presence of TADG-14 variant in said sample is indicative of the presence of carcinoma in said individual.

65. The method of claim 64, wherein said biological sample is selected from the group consisting of blood, interstitial fluid, ascites fluid, tumor tissue biopsy and circulating tumor cells.

66. The method of claim 64, wherein said detection of TADG-14 variant is by means selected from the group consisting of Northern blot, Western blot, PCR, dot blot, ELISA sandwich assay, radioimmunoassay, DNA array chips and flow cytometry.